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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,244

04/16/2004

Tae Soo Park

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05/25/2006

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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/826,244

Applicant(s)

PARK, TAE SOO

Examiner

Audrey Y. Chang

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on March 29, 2006, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 5, 10-12, 14-15, and 18-19.
- Claims 1-19 remain pending in this application.

Response to Amendment

1. The amendment filed **March 29, 2006** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: **claims 1 and 12 have been amended** to include the phrase "wherein a portion of the convertible regions having no parallax image becomes transparent and a portion of the convertible regions having parallax images becomes opaque" and "the length for a segment of the convertible region is $(n-1)(D-d)/D$ where n is the number of the parallax images, p is a pixel dimension, D is the distance from a viewer to the mask and d is the distance from the mask to the display panel". The specification simply fails to teach such. As indicated by all the figures in the specification, the mask is overlaying the display panel having these parallax images displayed, there is not such portion of the "convertible regions" has no parallax images. Also the segment length for the convertible regions has the size of $(n-1)(D-d)/D$ only if the convertible regions is opaque.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

Art Unit: 2872

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

4. **Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the **enablement** requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 12 have been amended to include the phrase "*wherein a portion of the convertible regions having no parallax image becomes transparent and a portion of the convertible regions having parallax images becomes opaque*". The specification simply fails to teach that the convertible regions have any portion that does not have parallax images and these regions are made transparent. The convertible regions of the mask, do not have any parallax images per se, since the parallax images are displayed on the display panel. Yet the mask is overlaid the display panel, then there cannot be any regions or portions that is does not overlay a parallax image.

Claims 1 and 12 have been amended to include the phrase "*wherein the length for a segment of transparent region is $p(D-d)/D$ and the length for a segment of the convertible region is $(n-1)p(D-d)/D$ where n is the number of the parallax images, p is a pixel dimension, D is the distance from a viewer to the mask, and d is the distance from the mask to the display panel*". By the simple geometry, these

Art Unit: 2872

equations are wrong and can only be true if the observation distance D is measured between the observer and the display panel not the mask. Simple high-school geometry will show that the ratio between the length of the transparent region and the pixel dimension is equal to the ratio of the distance between the observer to the mask and the distance between the observer to the display panel. " D " in this case has to be the distance between the observer and the display panel not the mask to make the equation works.

The three-dimensional image display simply cannot be operable by the above conditions.

Claim Objections

5. **Claims 1-19 are objected to because of the following informalities:**

(1). The phrase "convertible regions" recited in claim 1 is confusing and indefinite since the claim fails to teach what is the physical or optical condition of these convertible regions for it to make the device *capable* of three dimensional image display. **The amended phrase tends to remedy this objection still fails to definite define the "convertible regions" and how do they function to enable the three-dimensional image display.**

(2). The **amended** phrase "the length for a segment of the transparent region ... and length for a segment of the convertible region" recited in claims 1 and 12 is confusing it is not clear what is considered to be the "transparent region" and the "convertible region" since there are portions in the convertible region being *transparent* too. Also the length equations specified here could only be true for the **actual** "transparent segment" and **actual** "opaque segment" in order for the three-dimensional image display to be realized.

(3). The amended phrase " n is the number of parallax images" recited in claims 1 and 12 is confusing since it is not clear what is considered to be the *number* of parallax images. The phrase has been examined in the interpretation as *number of views*.

Art Unit: 2872

(4). The amended phrase recites “p is a *pixel dimension*” recited in claims 1 and 12 is confusing and indefinite since it is not clear what is considered to be the “pixel dimension” and what does it relate to?

(5). It is not clear what is the *predetermined number* of the parallax images. The number therefore is arbitrary. The amendments to the claims still fail to define what is considered to be the “predetermined number of parallax images”. There must be a physical condition for determining such “predetermined number of parallax images” however the claims fail to explicitly state such and makes it to be arbitrary.

(6). It is not clear how exactly can the controller control the distance between the display panel and the mask, (with regard to claims 11 and 13). The specification and the claims fail to teach explicitly how exactly can the display panel and the mask be moved.

(7). The amended phrase “when the number of parallax image is *less than a predetermined number*” and the phrase “when the number of parallax images is *greater than the predetermined number*” recited in claims 14 and 15 are confusing and indefinite since it is not clear what is considered to be the *predetermined number*.

(8). Claim 17 is confusing and indefinite since it is not clear what does it mean by “detecting a portion of the convertible regions having no parallax”? All of the mask portions do not have parallax images since parallax images are displayed on the display panel not on the mask.

(9). The amended phrase “the portion of the mask having not parallax image of the convertible regions to become transparent regions” recited in claim 18 is confusing and indefinite since the none of the portions of the mask has any parallax images at all for the parallax images are displayed on the display panel not on the mask.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1-6, 8-10, 12, and 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Taniguchi et al (PN. 6,094,216).**

Taniguchi et al teaches a *stereoscopic image display apparatus* that is comprised of an *image display* (1, Figure 1) serves as the *display panel* for displaying a plurality of *parallax images* (Rs and Ls) and a *barrier* comprises a *spatial light modulator* (2) having *transparent regions* and *opaque regions*, serves as the *convertible regions*, alternatively arranged, wherein the spatial light modulator serves as the *mask* such that the transparent regions allows the right eye perspective image (Rs) and left eye perspective images (Ls) to reach the right eye (AR) and left eye (AL) of an observer respectively and the *opaque regions* prevents the right eye perspective images to reach left eye and prevents the left eye perspective images to reach right eye to enable the stereoscopic viewing condition, (please see Figures 1, 2A, 2B, 4A, 4B, 15A, 15B, 16B, 17, 18, 19A, 19B). The mask or the spatial light modulator (2) is placed *in front* of the image display panel.

Claims 1 and 12 have been amended to include the phrase “wherein the length for a segment of transparent region is $p(D-d)/D$ and the length for a segment of the convertible region is $(n-1)p(D-d)/D$ where n is the number of the parallax images, p is a pixel dimension, D is the distance from a viewer to the mask, and d is the distance from the mask to the display panel. Taniguchi et al teaches in the arrangement of the three-dimensional display device with observer at a distance C from the display panel to the observer, and the distance D between the display panel to the *mask* or the spatial

Art Unit: 2872

light modulator (please see Figure 1), wherein the length for a segment of the transparent regions B' is related to the pixel dimension P as $B' = P(C-D)/C$, (please see column 12, lines 1-2). Taniguchi et al teaches that the number of the parallax images is 2 or $n=2$ in this case and the length segment for the convertible region or the opaque region is of the same length as of the transparent region (please see Figures 1 and 11A and 11B) which means the length for the convertible or opaque region is also $P(C-D)/C$ or $(n-1)P(C-D)/C$ with $n=2$. This reference teaches that the observation distance C is measured from the observer to the display panel which is different from the instant application for the observation distance to be measured between observer and the mask. However by the **strictly geometric** calculation the equation cannot be true for the observation distance to be measured between the observer and the mask, (please see the reasons for rejection set forth in the 35 USC 112, first paragraph above). However since the value of " D " or " d " which is the distance between the mask and the display panel is very small as compared to the observation distance the number value, (please see for instant C has the values of 1000 mm and D has value of 5.05 mm, column 17, lines 43-45) for $(C-D)/C$ and $C/(C-D)$ (applicant's equation) is approximately the same to the first order of approximation. This reference therefore still reads on the claims.

With regard to claims 10 and 12, Taniguchi et al teaches that a *controller* (please see Figure 1) is provided to convert a portion of the convertible regions into transparent regions depends on the number of the parallax images, (please see the explicit teachings of different transparent/opaque regions patterns for different parallax images arrangements shown in Figures 2A, 2B, 4A and 4B).

With regard to claims 2-3, Taniguchi et al teaches that the mask or the spatial light modulator comprises a *liquid crystal display panel* wherein liquid crystal display segments forming the transparent and convertible regions, (please see column 11, lines 9-17).

With regard to claims 4-6, Taniguchi et al teaches that the transparent regions of the mask or spatial light modulator do not aligned in the perpendicular direction, (please see Figure 4B). A left side

Art Unit: 2872

upper transparent region aligned with a right side lower transparent region and a right side upper transparent region aligned with a left side lower transparent region as shown in Figures 4B, 16B, 17, 19B, 20B).

With regard to claims 8, 9, 17 and 18, Taniguchi et al teaches the convertible regions of the spatial light modulator or mask are converted to transparent regions for the regions of display panel displays no parallax images, (please see Figure 18).

With regard to claims 14-16, Taniguchi et al teaches that the number of transparent regions and therefore the size of transparent regions is in accordance with the number of parallax images, (please see Figures 4A, 4B, 17). The opaque regions are larger than the transparent regions as shown in Figure 4B.

With regard to claim 19, the controller aligns the transparent and opaque regions of the spatial light modulator or mask along horizontal direction, (please see Figure 4B).

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 7, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Taniguchi et al.**

The stereoscopic image display apparatus taught by Taniguchi et al as described for claims 1 and 12 above has met all the limitations of the claims.

With regard to claim 7, **Taniguchi et al** teaches that for *full color display*, (Figure 30), the right eye parallax image and the left eye parallax image are each including red, blue and green pixels. The full color right eye parallax image pixel therefore is represented by three color pixels. This implicitly means that in order for the transparent region to properly direct each of the color pixel to the proper eye, the transparent regions has to have a size in accordance with the size of the color pixel, which therefore will be *one third* of the original pixel. Such modification therefore is obvious to one skilled in the art for the benefit of allowing the full color stereoscopic image be properly observed.

With regard to claims 11 and 13, Taniguchi et al teaches that the transparent regions and the opaque regions of the mask or the spatial light modulator is controlled by the controller which takes into the account of the distance between the display panel and the mask, (please see Figure 1, distance D). This reference however does not teach explicitly to “control” a distance between the display panel and the mask. The claims fails to teach what does it means by “control the distance” it therefore can only be examined in broadest interpretation. Since the distance information is used to determine the pattern of the mask, (i.e. the size and locations of the transparent and opaque regions), this controller is in a way controls the distance and it would have been obvious to one skilled in the art to make the display panel and the mask have a relative distance between them that is in accordance with the information used in the controller to determine the mask pattern for the benefit of allowing the best mode stereoscopic viewing condition be established.

Response to Arguments

10. Applicant's arguments filed on March 29, 2006 have been fully considered but they are not persuasive. The amendments to the claims have been fully considered and rejected for the reasons stated above.

Applicant's arguments are mainly based on the amendments to the claims and they have been fully addressed for the reasons stated above.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

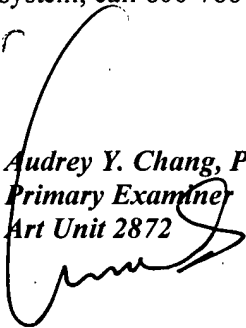
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.